REMARKS

In the Official Action, the Examiner rejected claims 1-85. As discussed below, claim 43 has been amended to recite proper dependency on independent claim 39. Further, claims 39 and 67 have been amended to set forth the claimed subject matter more clearly. Applicants respectfully request reconsideration of the application in view of the remarks set forth below. Applicants believe that all pending claims, as amended, are in condition for allowance.

Rejections Under 35 U.S.C. § 112

The Examiner rejected claim 43 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants have amended claim 43 to recite proper dependency on independent claim 39. Applicants respectfully submit that the amended claim fully complies with 35 U.S.C. §112. Accordingly, Applicants respectfully request withdrawal of the Examiner's rejection under 35 U.S.C. § 112, second paragraph.

Rejections Under 35 U.S.C. § 103

In the Official Action, the Examiner rejected claims 1-85 under 35 U.S.C. § 103(a) as being unpatentable by Gonzales et al. (U.S. Patent No. 6,101,614, hereinafter "Gonzales") in view of Arnold et al. (U.S. Patent No. 6,279,128, hereinafter "Arnold"). The Examiner's rejections are too lengthy to be reproduced efficiently herein. Nonetheless, Applicants respectfully traverse the Examiner's rejections.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination or modification. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

Further, Applicants respectfully remind the Examiner that he should "never overlook the importance of his or her role in allowing claims which properly define the invention." M.P.E.P. § 706. Here, the claims not only properly define the invention, they also clearly contain recitations that are not described, much less suggested, by any of the prior art of record. Accordingly, Applicants urge the Examiner to withdrawal the outstanding rejections and allow the pending claims.

Claims 1-66

Independent claims 1, 21, and 39 recite, among other things, a memory sub-system comprising: "a plurality of memory cartridges," "a cleansing device configured to periodically initiate an internal READ command," and "a monitoring device configured...to change the frequency of periodic initiations...based on the number of requests." Applicants respectfully submit that the references fail to disclose at least these recited features. Because the cited

references, either alone or in combination, do not disclose all of the recited elements, the cited

combination is insufficient to establish a *prima facie* case of obviousness.

The Memory Cartridges

Among other things, the present application is directed to a memory sub-system

comprising a plurality of memory cartridges. Page 12, lines 21-22. Each of these memory

cartridges may include "a plurality of DIMMs 44 and a corresponding memory control device

48." Page 13, lines 3-4. Further, each of these memory cartridges "may be removed (hot-

plugged) from the memory sub-system 40." Page 13, lines 8-9. Accordingly, independent

claims 1, 21, and 39 recite "a memory sub-system comprising: a plurality of *memory*

cartridges." Emphasis added. Neither the Gonzales reference nor the Arnold reference

discloses this feature. Specifically, neither of the references discloses a memory sub-system

comprising a plurality of *memory cartridges*, even under the broadest *reasonable*

interpretation.

Applicants respectfully remind the Examiner that M.P.E.P. § 2111 states that

"[d]uring patent examination, the pending claims must be given there [*sic*] broadest

reasonable interpretation <u>consistent with the specification</u>." Emphasis added. While

limitations from the specification cannot be read into the claims, "reading a claim in light of

the specification, to thereby interpret limitations explicitly recited in the claim is a quite

different thing from 'reading limitations of the specification into a claim...'" M.P.E.P. §

2111, *In re Prater*, 415F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969).

The Examiner correlated the "memory array" disclosed in Gonzales as the recited

memory cartridges. Applicants respectfully submit that this interpretation is unreasonable and

wholly inconsistent with the present specification. As stated in the present specification, "[i]t

should be evident that each of the memory cartridges 42a-e may be removed (hot-plugged)

from the memory sub-system 40." Page 13, lines 8-9. Gonzales does not disclose that the a

memory array includes any removable features or anything that would suggest that the

memory array comprises "memory cartridges." This feature is simply not present in

Gonzales. Because this feature is also notably absent from the Arnold reference, it is clear

that the Arnold reference does not cure this deficiency in the Gonzales reference.

Because neither of the cited references, either alone or in combination discloses "a

memory sub-system comprising: a plurality of memory cartridges," as recited in claims 1, 21,

and 39, the cited references cannot possibly render the recited subject matter obvious.

Accordingly, Applicants respectfully request withdrawal of the Examiner's rejection and

allowance of independent claims 1, 21, and 39 and their respective dependent claims.

The Cleansing Device

The present application is further directed to a memory sub-system containing a

cleansing device [that] "initiates a routine based on an operator instruction, a pre-determined

periodic instruction, or some sequence of events such as a hot-plug event, for example."

Page 16, lines 22-23. As stated in the present application, "relying on READ operations sent

from peripheral devices will only result in detection of errors on those devices from which

data is read. By relying on the READ command from a peripheral device, certain areas of

memory may sit idle for extended periods thereby allowing data errors to accumulate

undetected." Page 16, lines 16-20. Accordingly, independent claims 1, 21, and 39 recite "a

memory sub-system comprising...a cleansing device configured to periodically initiate an

internal READ command."

Neither Gonzales nor Arnold disclose "a memory sub-system comprising...a

cleansing device configured to periodically initiate an internal READ command." Gonzales

is directed a system that performs "automatic memory scrubbing *upon memory reads.*" Col.

7, line 42. Emphasis added. It is merely "an efficient...mechanism within the memory

controller for writing [back] data that has been corrected by ECC hardware" during *ordinary*

memory reads by the system memory. Col. 2, lines 58-67, col. 3, lines 1-9. As such, the

Gonzales does not disclose any type of "*cleansing device* configured to periodically *initiate*

an internal READ command," as recited in claims 1, 21, and 39. Emphasis added.

The Arnold reference does not cure this deficiency in the Gonzales reference. The

Arnold reference teaches a *pattern recognition* system that operates in conjunction with a

conventional memory controller and conventional memory. Col. 5, lines 27-30. The pattern

recognizer is configured to detect data patterns in errors detected *during ordinary memory*

reads by the system memory. Col 5, lines 56-67. Clearly, the Arnold reference does not

disclose a "*cleansing device* configured to periodically *initiate* an internal READ command,"

as recited in claims 1, 21, and 39. Emphasis added.

As describe above, neither of the cited references, either alone or in combination,

discloses a "*cleansing device* configured to periodically *initiate* an internal READ

command," as recited in claims 1, 21, and 39. Emphasis added. For this additional reason,

the cited references cannot possibly render the recited subject matter obvious. Accordingly,

Applicants respectfully request withdrawal of the Examiner's rejection and allowance of

claims 1-66.

The Monitoring Device

The present invention is further directed to a memory sub-system containing "a

component to monitor the memory sub-system and modify the memory cleansing and

subsequent scrubbing frequency." Page 21, lines 5-7. As such, claims 1, 21, and 39 recite "a

monitoring device configured to monitor the memory network bus and further configured to

change the frequency of periodic initiations of the internal READ commands based on the

number of requests on the memory network bus over a period of time." Contrary to the

Examiner's assertions, the cited references do not disclose this additional feature, either.

As the Examiner correctly noted in the Official Action, "Gonzales does not explicitly

teach...a monitoring device configured to monitoring the memory network bus and

configured to change the frequency of periodic initiations of the internal READ command."

Page 5, lines 1-4. However, contrary to the Examiner's assertion, the Arnold reference fails

to disclose this feature, either.

As discussed above, the Arnold reference discloses a *pattern recognition* system that operates

in conjunction with a conventional memory controller and conventional memory. Col. 5,

lines 27-30. This pattern recognition system is not "configured to change the frequency of

periodic initiations of the internal READ commands," as recited in claims 1, 21, and 39. On

the contrary, the pattern recognition system described in the Arnold reference is a purely

passive system that is designed to search through memory being scrubbed as part of a

"sophisticated computer virus analysis and neutralization routine." Col. 5, lines 4-5. The

main component in this pattern recognizer is a "data pattern manager 12 ... [that] has access to the continual stream of control words on the internal bus 66, the continuous stream of physical addresses on the internal bus 68 and the stream of data words on bus 56." Col. 6, lines 31-34. The data pattern monitor in the Arnold reference then passes this continuous flow of data to "a code signature computation circuit" that looks for a target pattern. Col. 6, lines 43-55. The pattern recognition system described in Arnold is clearly a passive system; it merely receives data to be searched. It clearly does not have the capability to "change the frequency of periodic initiations of the internal READ commands," as recited in claims 1, 21, and 39.

For the additional reasons set forth above, it is clear that neither the Gonzales reference nor the Arnold reference discloses a monitoring device or any device configured in such a way as recited in claims 1, 21, and 39. For this additional reason, the cited references cannot possibly render the recited subject matter obvious. Accordingly, Applicants respectfully request withdrawal of the Examiner's rejection and allowance of claims 1-66.

For at least the reasons set forth above, Applicants respectfully submit the cited references do not disclose a memory sub-system comprising: "a plurality of memory cartridges," "a cleansing device configured to periodically initiate an internal READ command," or "a monitoring device configured…to change the frequency of periodic initiations…based on the number of requests." Because the cited references, either alone or in combination, do not disclose all of the recited elements, the cited combination is insufficient to establish a *prima facie* case of obviousness.
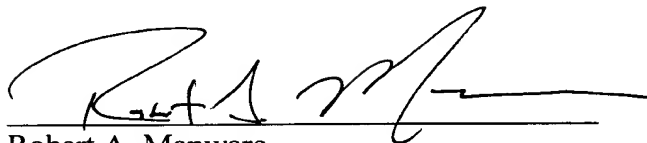
Claims 67-85

While Applicants respectfully submit that neither the Gonzales reference nor the Arnold reference discloses each of the elements previously recited in claim 67, the claim has been amended to more clearly set forth the recited subject matter. Accordingly, amended claim 67 recites "a method for dynamically scheduling access to a memory sub-system, comprising the acts of... periodically initiating internal READ commands from a cleansing device in the memory sub-system, wherein the period between initiating each READ command is dependent on the activity on the memory bus and *wherein the cleansing device is configured to periodically initiate the internal READ commands.*" Emphasis added. For the reasons stated above with regard to claims 1-66, it should be clear that none of the prior art of record discloses a system having all of the limitations of the present claims. More specifically, none of the references discloses a method for dynamically scheduling access to a memory sub-system comprising the act of periodically initiating internal READ commands from a cleansing device configured periodically to initiate the internal READ commands. Accordingly, Applicants respectfully submit that none of the references discloses the presently recited subject matter, and respectfully requests withdrawal of the Examiner's rejections under 35 U.S.C. § 103 and allowance of claims 67-85.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims 1-85. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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